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This question paper contains 04 pages



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BENGALURU REGION
COMMON PRE BOARD EXAMINATION – 2018-19

SET-3

Class: XII

Sub: CHEMISTRY

Time: 3 Hrs.

Max. Marks: 70

General Instructions:

- (i) All questions are compulsory.
- (ii) Section A: Q.no. 1 to 5 are very short answer questions and carry 1 mark each.
- (iii) Section B: Q.no. 6 to 12 are short answer questions and carry 2 marks each.
- (iv) Section C: Q.no. 13 to 24 are also short answer questions and carry 3 marks each.
- (v) Section D: Q.no. 25 to 27 are long answer questions and carry 5 marks each.
- (vi) There is no overall choice. However an internal choice has been provided in two questions of one mark, two questions of two marks, four questions of three marks and all the three questions of five marks weightage. You have to attempt only one of the choices in such questions.
- (vii) Use of log tables if necessary, use of calculators is not allowed.

SECTION A

1. What type of semiconductor is obtained when Ge is doped with In?
2. Write the name of the major product when ethanol reacts with thionyl chloride.

OR

Write the name of the major product when propene is treated with HBr in presence of benzoyl peroxide.

3. Explain –
Why Wilted flowers revive when placed in fresh water

OR

Sea divers using oxygen cylinder in which oxygen is diluted with nitrogen and Helium

4. Which type of colloidal system is present in butter?
5. Write the name of artificial sugar which is tri-choloro derivative sucrose which is stable at cooking temperature.

SECTION B

6. Calculate the freezing point of the solution when 1.9g of $MgCl_2$ ($M = 95 \text{ gmol}^{-1}$) was dissolved in 50g of water, assuming $MgCl_2$ undergoes complete ionization. (K_f for water = 1.86 KKgmol^{-1})

OR

Calculate the boiling point of solution prepared by adding 15.00 g of NaCl to 250.0g of water (K_b of water = $0.512 \text{ KKgmol}^{-1}$, molar mass of NaCl = 58.44 g/mol)

7. (a) Arrange the following compounds in decreasing order of basic strength in aq. Phase
 NH_3 , CH_3NH_2 , $(CH_3)_2NH$ and $(CH_3)_3N$
(b) Convert phenol into nitrobenzene in not more than two steps.

OR

(a) Arrange the following compounds in increasing order of acidic strength
Formic acid, Phenol, Benzoic acid and 4- Nitrobenzoic acid

- (b) Convert Acetic acid into α - Chloroacetic acid.

8. Write mechanism of reaction of acid dehydration of Ethanol with con. H_2SO_4 at 443K to form ethene.
9. Explain the following:
(a) Deltas are formed where river meets sea water.
(b) Lyophilic sols are easily prepared as compared to lyophobic sols.
10. (a) Write the principle of technique used in zone refining process.
(b) Write principle of refining of Zr (zirconium) during its metallurgical operation.
11. Draw the structure of following compounds
(a) XeO_3 (b) H_3PO_2
12. Distinguish between following compound
(a) Propanal and propanone
(b) Benzoic acid and phenol

SECTION C

13. Answer the following:
(a) Which type of intermolecular force exist between (a) NaClO_4 and water (ii) I_2 and Water
(b) State Raoult's Law for volatile solute.
(c) Out of BaCl_2 and KCl , which is more effective in coagulation of negatively charged sol and why?
14. Write the structure of monomer of the following polymer:
(a) Bakelite
(b) Nylon 6,6
(c) PHBV

OR

Write the structure of monomer of following polymer

- (a) Neoprene
(b) Nylon 6
(c) Teflon
15. Explain the following:
(a) Zn, Cd and Hg are soft and have low melting point.
(b) Why La $(\text{OH})_3$ is more basic than Lu $(\text{OH})_3$?
(c) Sc forms no coloured ion yet it is regarded as a transition element.

OR

- (a) Dip in melting point is observed at Mn in first transition series.
(b) Chemistry of all lanthanoid is quite similar.
(c) Why Cu^+ ion is not stable in aq. Solution?
16. (a) What is soap? Give an example.
(b) What is non ionic detergent? Give one use.
(c) What is broad spectrum antibiotic? Give an example.
- OR
- (a) Why is bithional added to soap?
(b) Name two macromolecule which are chosen as drug target.
(c) What are main constituent of dettol?
17. (a) Name a vitamin which helps in coagulation of blood.
(b) Name the heterocyclic base which is present in RNA but not in DNA.
(c) Name the carbohydrates which are obtained by hydrolysis with dil. acid of lactose.

18. Complete the following chemical reaction:

- (a) $\text{Cl}_2 + \text{NaOH}$ (hot and Conc.) \rightarrow
(b) $\text{Ca}_3\text{P}_2 + \text{H}_2\text{O} \rightarrow$
(c) $\text{NH}_4\text{Cl} + \text{NaNO}_3 \rightarrow$

OR

- (a) $\text{Cu} + \text{H}_2\text{SO}_4 \rightarrow$
(b) $\text{U} + \text{ClF}_3 \rightarrow$
(c) $\text{P}_4 + \text{NaOH} + \text{H}_2\text{O} \rightarrow$

19. Copper crystallizes into fcc lattice with edge length 3.61×10^{-8} cm. Calculate the density of copper. ($N_0 = 6.022 \times 10^{23} \text{ mol}^{-1}$ atomic mass of Cu = 63.5 g cm^{-3})

20. Explain why

- (a) The dipole moment of chlorobenzene is lower than cyclohexyl chloride.
(b) Alkyl halides are immiscible with water; however they are polar in nature.
(c) Aniline does not undergo Friedel craft reaction.

21. Write following reactions:

- (a) Hofmann Bromamide reaction
(b) Carbylamine reaction
(c) Finkelstein reaction.

22. (a) Write formula of the coordination compound amminebromidochloridonitrito-N-platinate (II)

(b) A solution of $[\text{Ni}(\text{H}_2\text{O})_6]^{2+}$ is green but solution of $[\text{Ni}(\text{CN})_4]^{2-}$ is colourless. Explain.

23. (a) Arrange the following in increasing order of acidic character

MnO_2 , Mn_2O_7 and MnO

(b) What happens when KMnO_4 is heated? Give chemical equation.

(c) What are non stoichiometric oxides? Give one example.

24. (a) Why does NH_3 form hydrogen bond but PH_3 does not?

(b) Write one use of ClO_2 .

(c) Arrange NH_3 , PH_3 , AsH_3 , SbH_3 and BiH_3 in increasing order of base strength.

SECTION D

25. (a) How do you convert ethanal into But-2-enal

(b) Arrange the following compound in the increasing order of reactivity towards HCN

Acetaldehyde, Acetone, Di-tert-butylketone, Methyl tert-butylketone

(c) An organic compound (A), molecular formula ($\text{C}_8\text{H}_{16}\text{O}_2$) was hydrolysed with dil. sulphuric acid to give carboxylic acid (B) and an alcohol (C). Oxidation of (C) with chromic acid produces (B). (C) on dehydration gives but-2-ene as a major product. Write equations for the reactions involved and identify A, B and C.

OR

a) Arrange the following carbonyl compounds in increasing order of their reactivity in nucleophilic addition reaction.

Benzaldehyde, p-tolualdehyde, p-nitrobenzaldehyde, acetophenone

(b) Which acid is stronger and why?

CH_3COOH or FCH_2COOH

(c) Complete the following reactions



